

## Claims

- [c1] An electrophoretic medium comprising a plurality of particles suspended in a suspending fluid, the particles being capable of moving through the fluid upon application of an electric field to the medium, the fluid having dissolved or dispersed therein a polymer having a number average molecular weight in excess of about 20,000, the polymer being essentially non-absorbing on the particles.
- [c2] An electrophoretic medium according to claim 1 wherein the polymer has a number average molecular weight in excess of about 100,000.
- [c3] An electrophoretic medium according to claim 2 wherein the polymer has a number average molecular weight in the range of about 150,000 to about 3,000,000.
- [c4] An electrophoretic medium according to claim 1 wherein the polymer has a weight average molecular weight in excess of about 100,000.
- [c5] An electrophoretic medium according to claim 4 wherein the polymer has a weight average molecular weight in the range of about 300,000 to about 3,000,000.
- [c6] An electrophoretic medium according to claim 1 wherein the polymer has a polydispersity index not greater than about 2.
- [c7] An electrophoretic medium according to claim 1 wherein the polymer is a hydrocarbon polymer essentially free from aromatic groups.
- [c8] An electrophoretic medium according to claim 7 wherein the polymer is a polyolefin.
- [c9] An electrophoretic medium according to claim 8 wherein the polymer is a polyisobutylene.
- [c10] An electrophoretic medium according to claim 9 wherein the polyisobutylene has a viscosity average molecular weight in the range of about 200,000 to 1,200,000 g/mole.

- [c11] An electrophoretic medium according to claim 1 wherein the polymer is a polysiloxane.
- [c12] An electrophoretic medium according to claim 1 wherein the suspending fluid is an aliphatic hydrocarbon.
- [c13] An electrophoretic medium according to claim 1 wherein the suspending fluid is a mixture of an aliphatic hydrocarbon and a halogenated hydrocarbon.
- [c14] An electrophoretic medium according to claim 1 wherein the suspending fluid and polymer are such that the scaling exponent for variation of intrinsic velocity with molecular weight falls in the range of about 0.55 to about 0.8.
- [c15] An electrophoretic medium according to claim 1 wherein the polymer is present in an amount of from about 0.25 to about 2.5 per cent by weight of the suspending fluid.
- [c16] An electrophoretic medium according to claim 15 wherein the polymer is present in an amount of from about 1 to about 2 per cent by weight of the suspending fluid.
- [c17] An electrophoretic medium according to claim 1 which is encapsulated, with the suspending fluid and particles being retained within a plurality of capsules.
- [c18] An electrophoretic medium according to claim 1 which is of a two-phase type, the suspending fluid and particles forming a discontinuous phase comprising a plurality of droplets, the droplets being surrounded by a continuous phase.
- [c19] An electrophoretic medium according to claim 18 wherein said droplets comprise at least about 40 per cent by volume of the electrophoretic medium.
- [c20] An electrophoretic medium according to claim 1 which is of the dual particle type having two different types of particles having different electrophoretic mobilities.
- [c21] An electrophoretic medium according to claim 20 which is encapsulated, with the suspending fluid and the two types of particles being retained within a plurality of capsules.

- [c22] An electrophoretic medium according to claim 1 having an image stability of at least about 1,000 seconds.
- [c23] An electrophoretic medium according to claim 22 having an image stability of at least about 10,000 seconds.
- [c24] An electrophoretic medium comprising a plurality of particles suspended in a hydrocarbon suspending fluid, the particles being capable of moving through the fluid upon application of an electric field to the medium, the fluid having dissolved or dispersed therein a polyisobutylene having a viscosity average molecular weight in the range of about 400,000 to 1,200,000 g/mole, the polyisobutylene comprising from about 0.5 to about 2.5 per cent by weight of the suspending fluid.
- [c25] An electrophoretic display comprising an electrophoretic medium according to claim 1 and at least one electrode arranged adjacent the medium and capable of applying an electric field to the medium.
- [c26] An electrophoretic display according to claim 25 having two electrodes disposed on opposed sides of the electrophoretic medium, at least one of the electrodes being substantially transparent such that the electrophoretic medium can be viewed through the substantially transparent electrode.
- [c27] An electrophoretic display according to claim 25, wherein the suspending fluid and particles being retained within a plurality of capsules, the capsules being retained within a solid binder, and the electrode being secured to the binder.
- [c28] An electrophoretic medium comprising a plurality of particles suspended in a suspending fluid, the particles being capable of moving through the fluid upon application of an electric field to the medium, the fluid having dissolved or dispersed therein a polymer having an intrinsic viscosity of  $\eta$  in the suspending fluid and being substantially free from ionic or ionizable groups in the suspending fluid, the polymer being present in the suspending fluid in a concentration of from about  $0.5 [\eta]^{-1}$  to about  $2.0 [\eta]^{-1}$ .